

(No Model.)

3 Sheets—Sheet 1.

J. VOLK.
CABLE GRIP.

No. 413,584.

Patented Oct. 22, 1889.

Fig. 1.

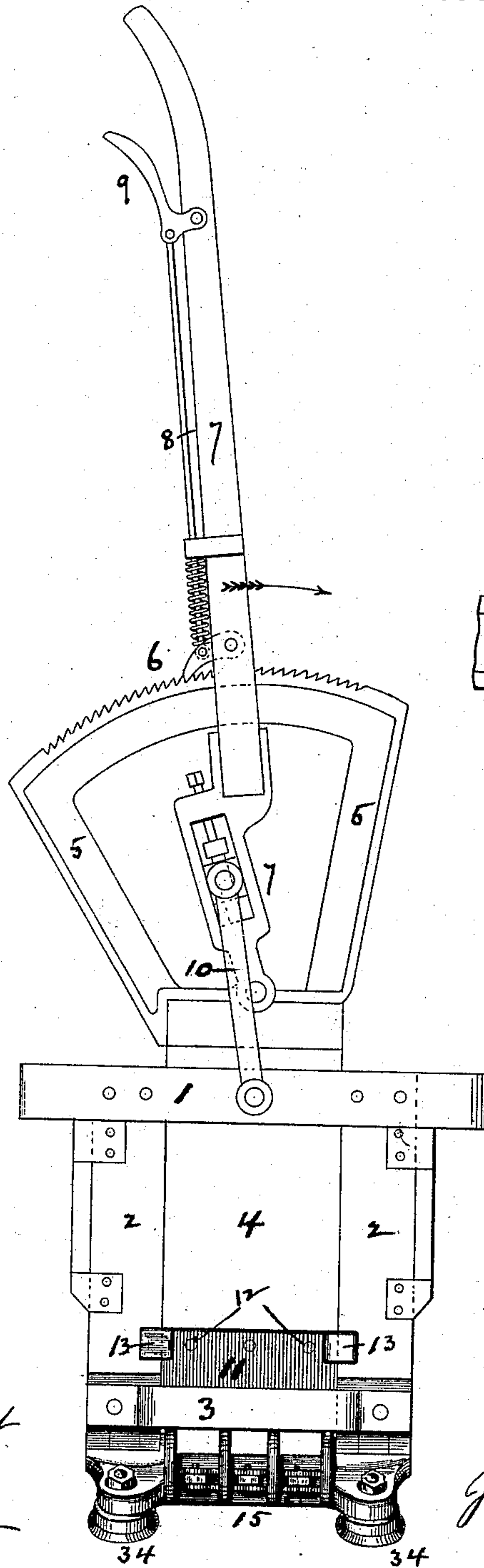
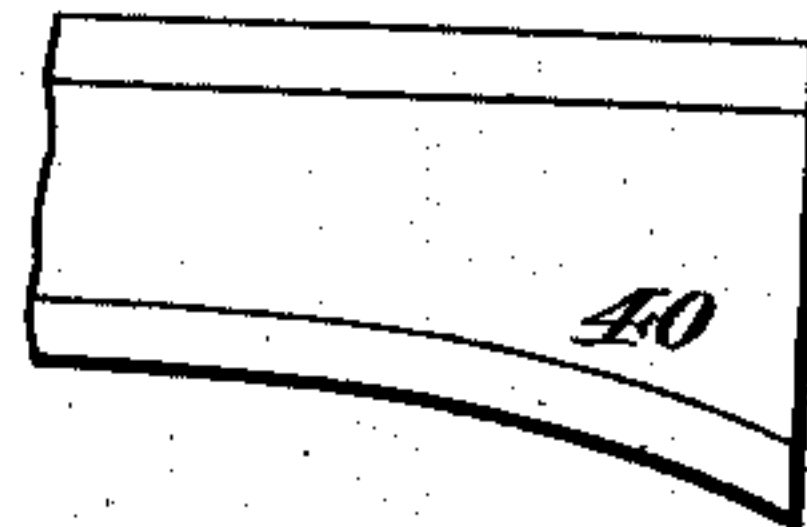


Fig. 13.



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Fig. I.

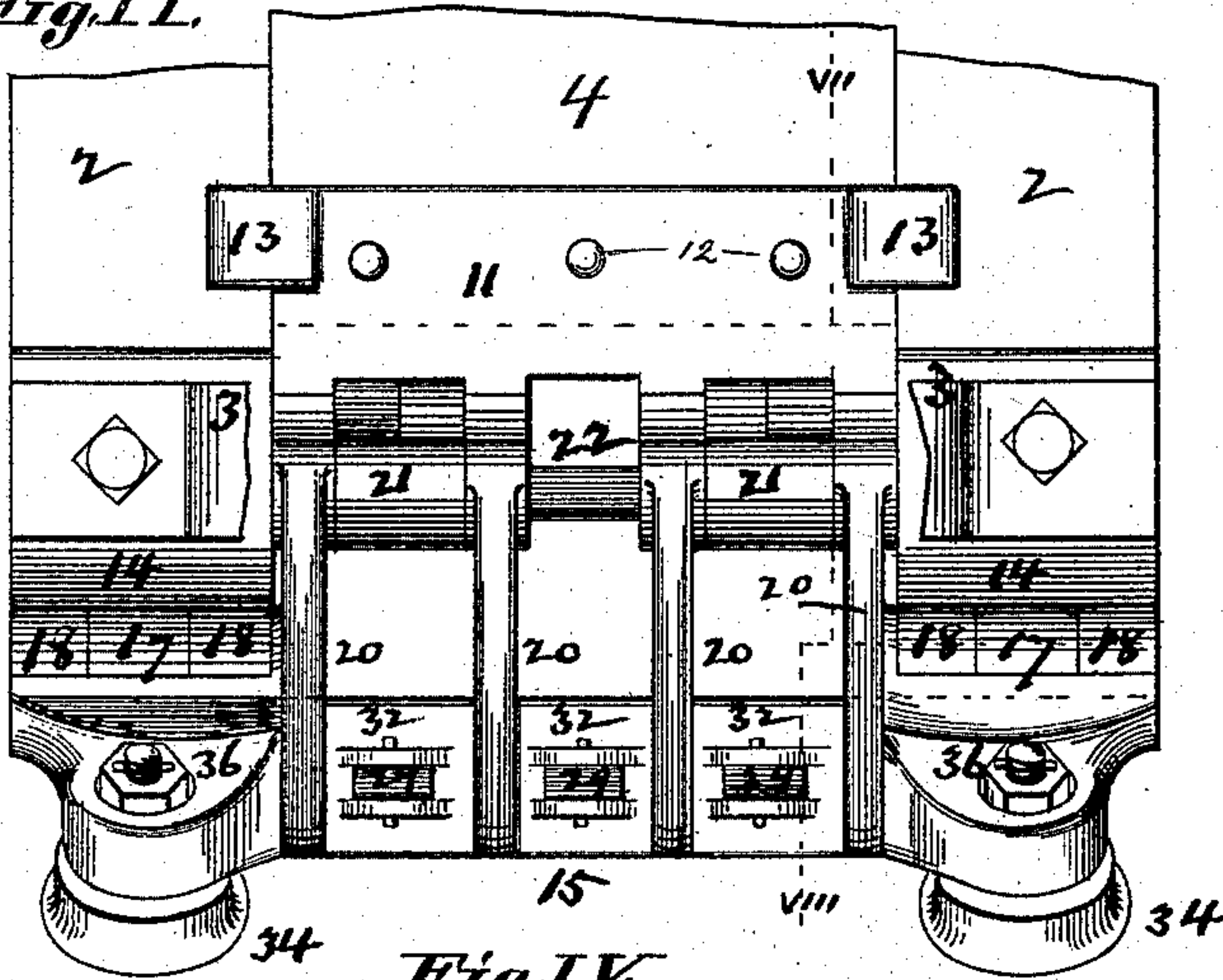


Fig. III.

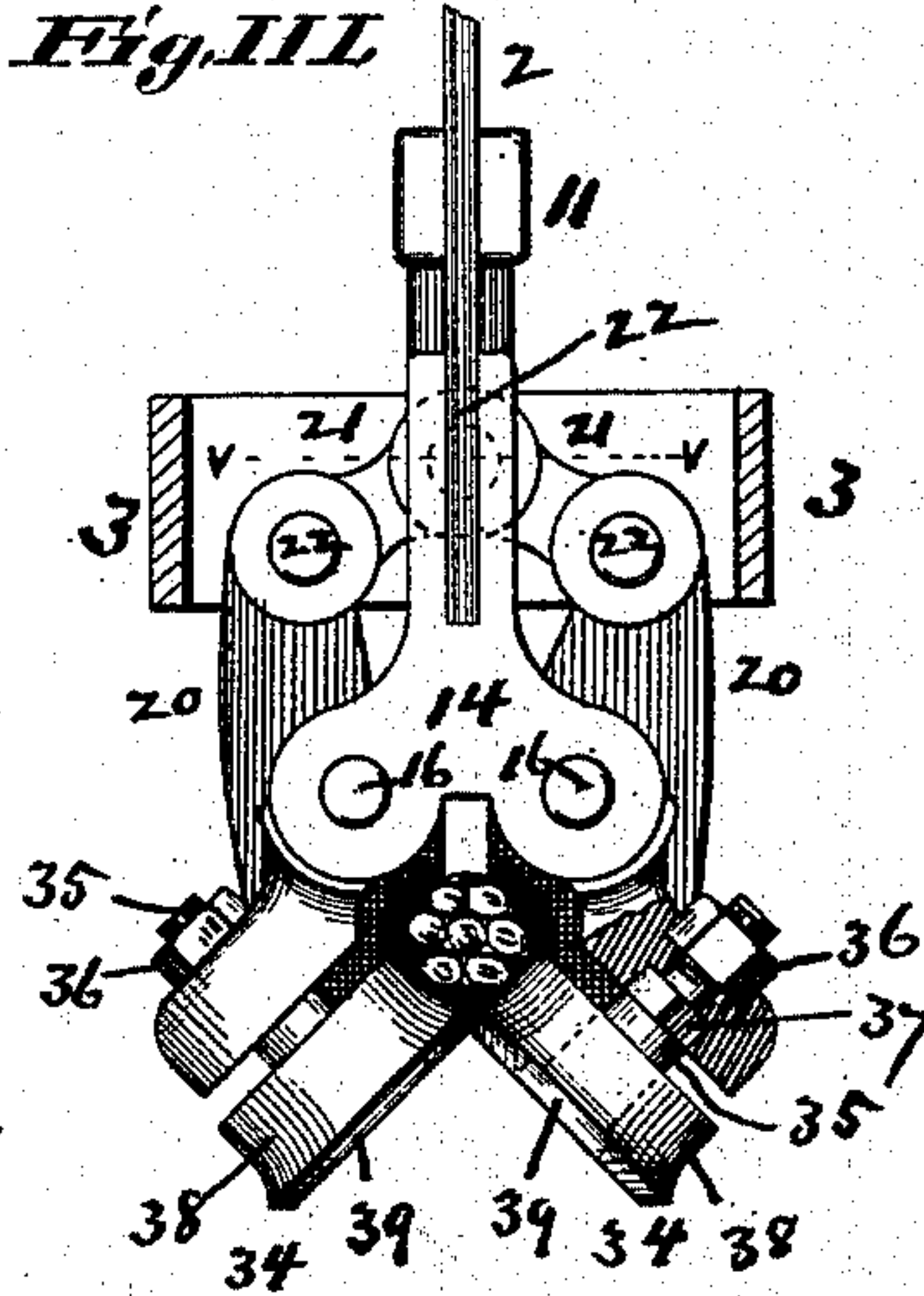


Fig. IV.

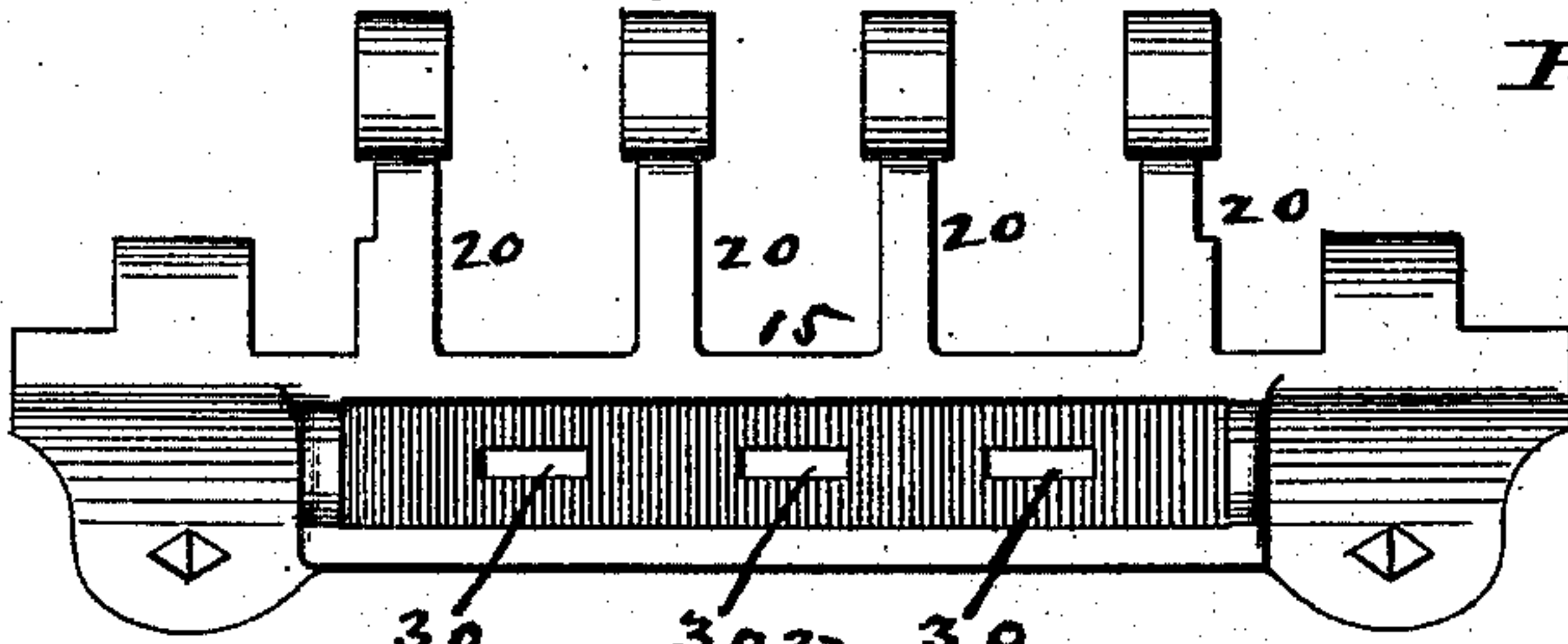


Fig. V.



Fig. VI.

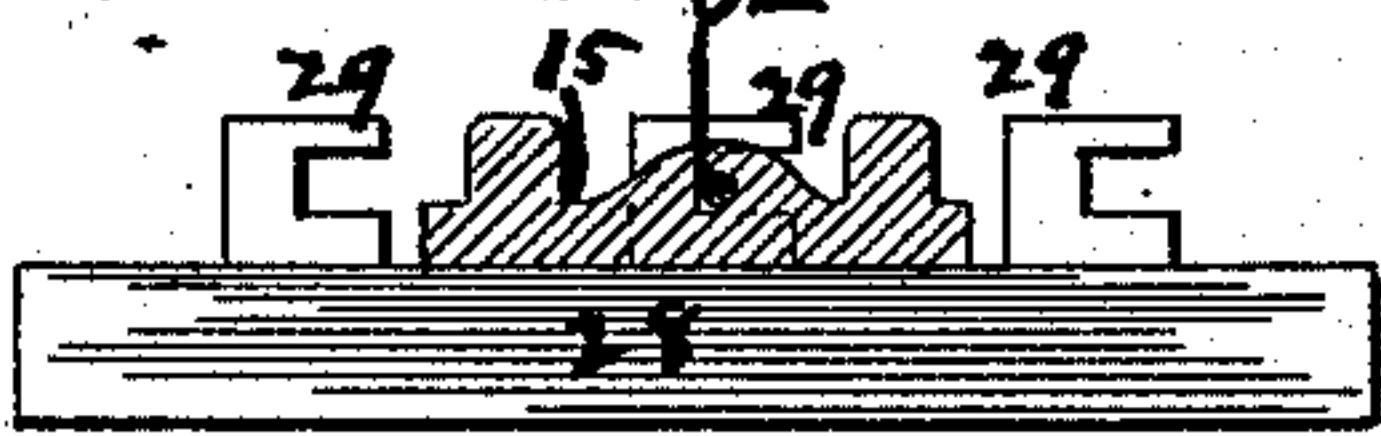


Fig. VII.

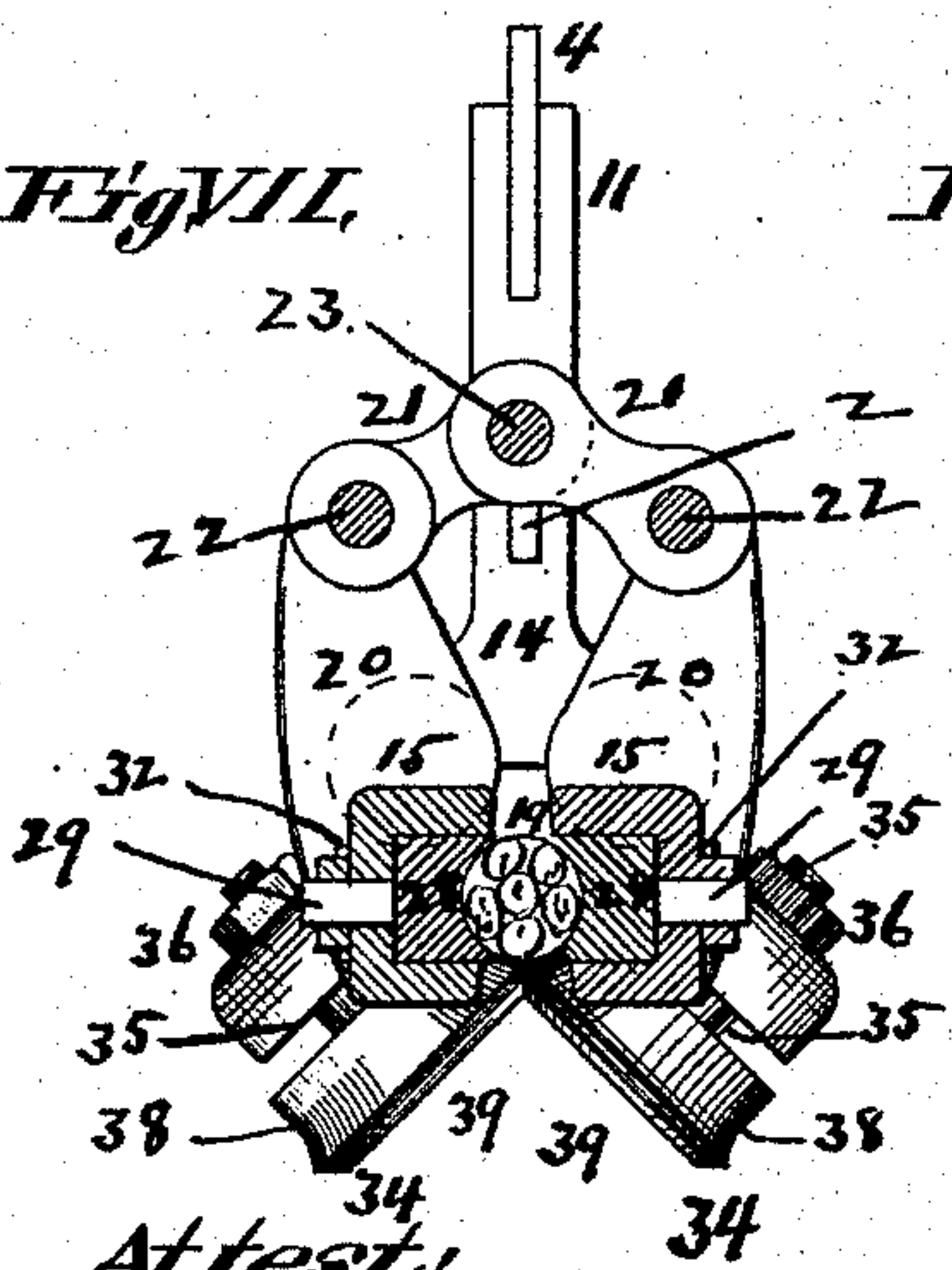
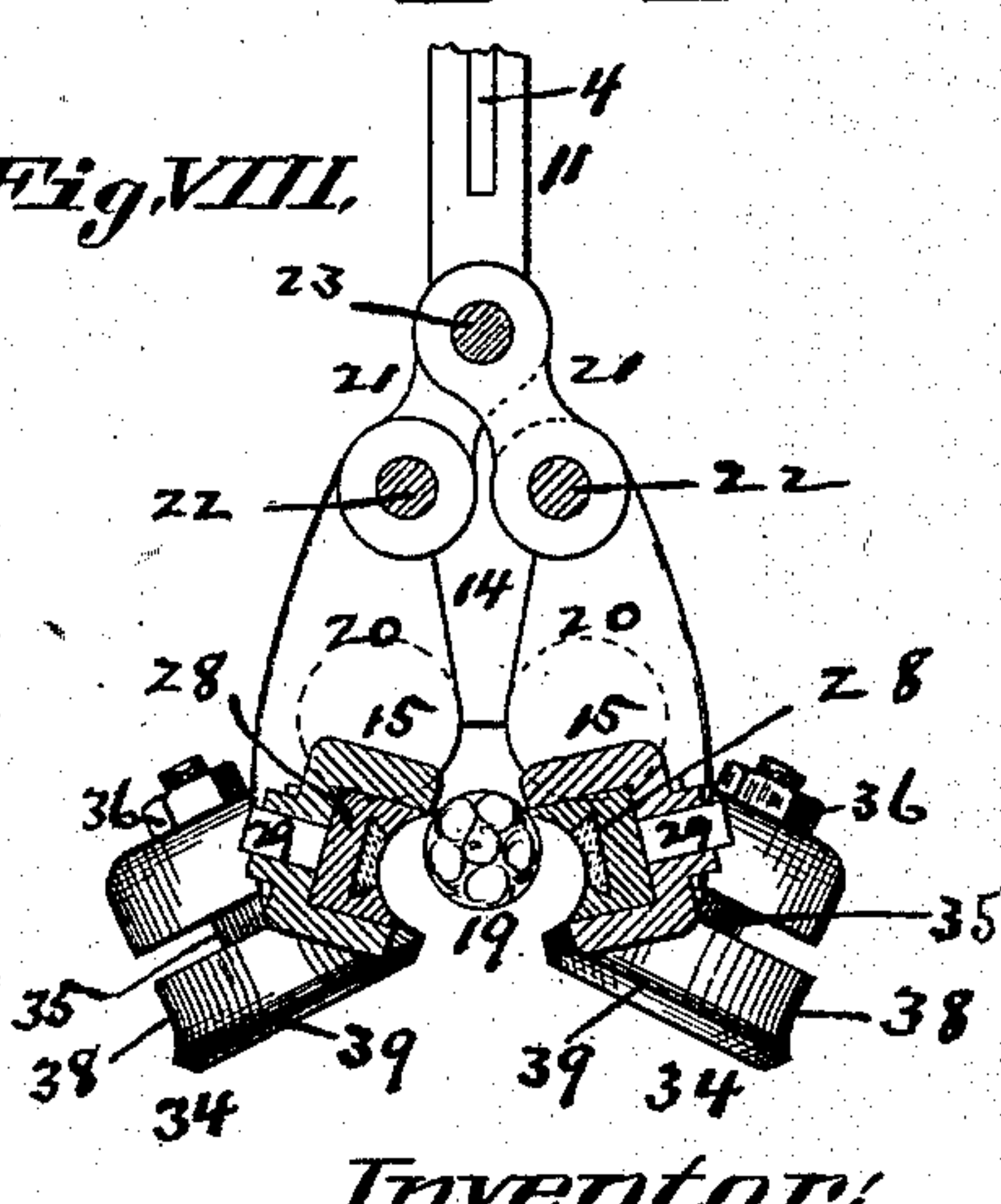


Fig. VIII.



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Fig. IX.

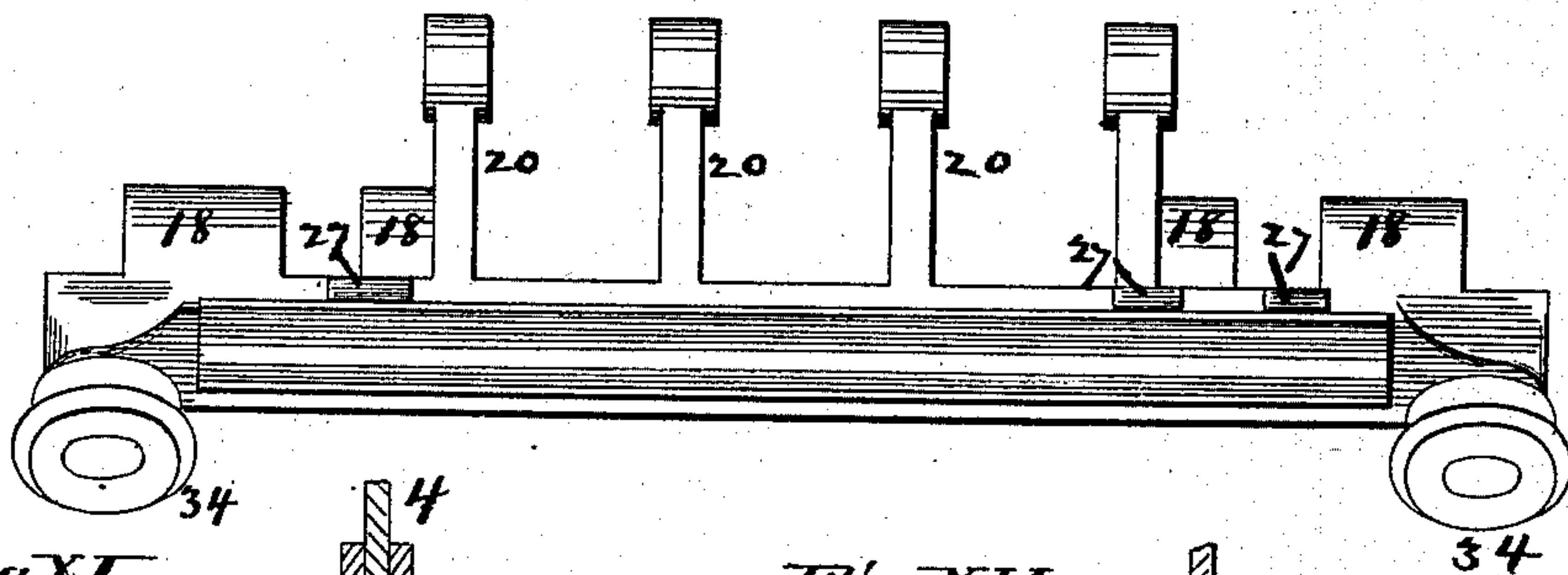
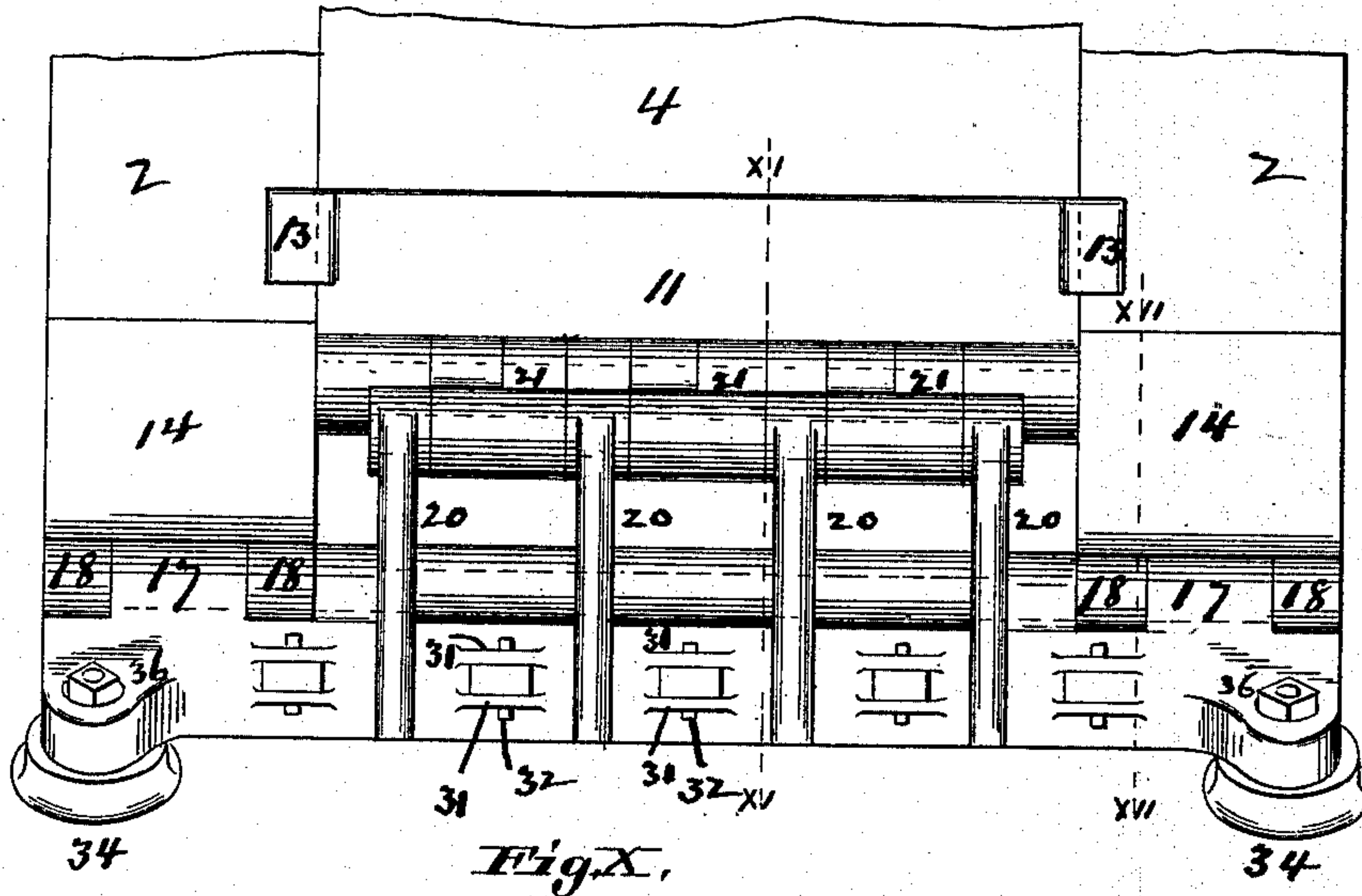
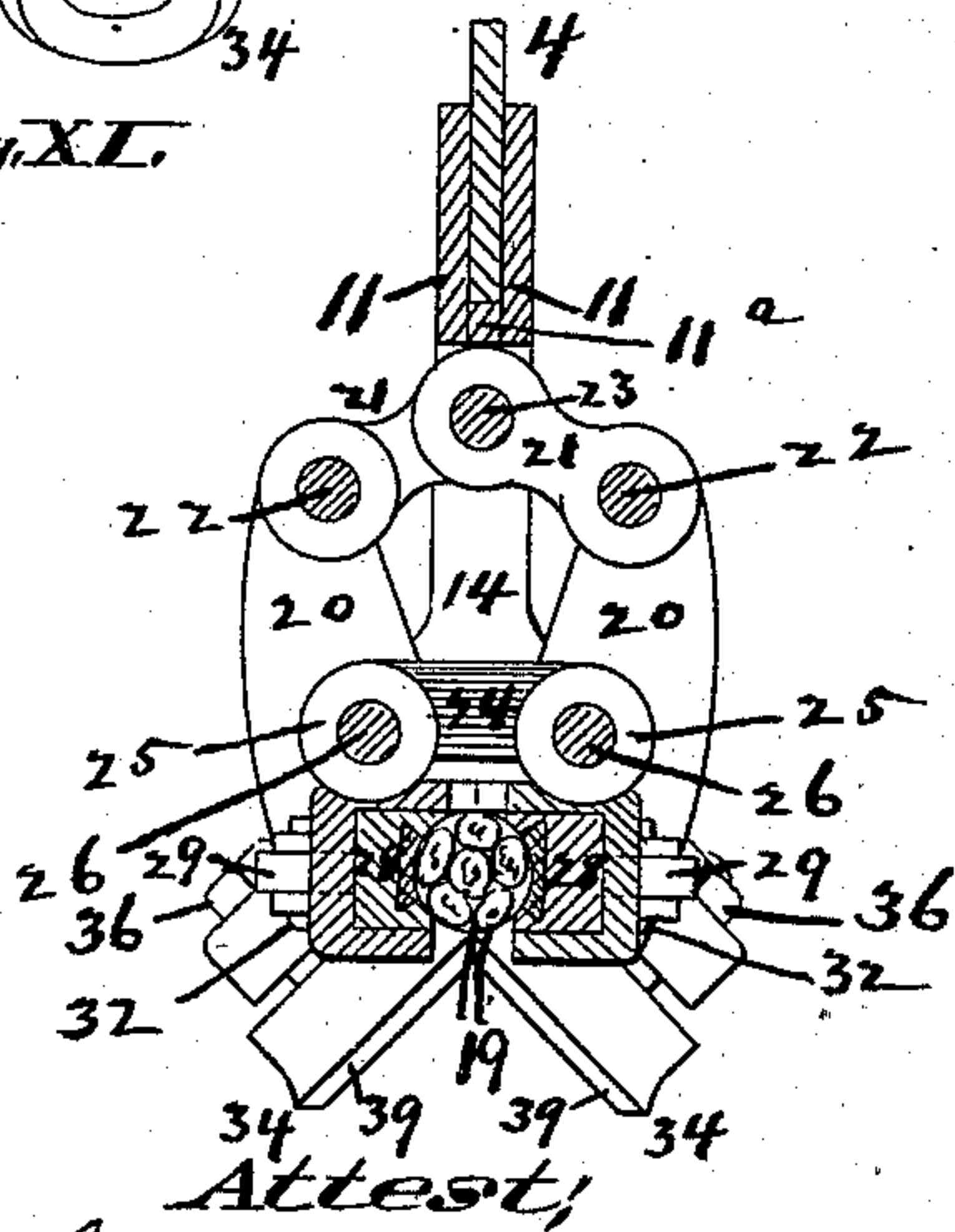
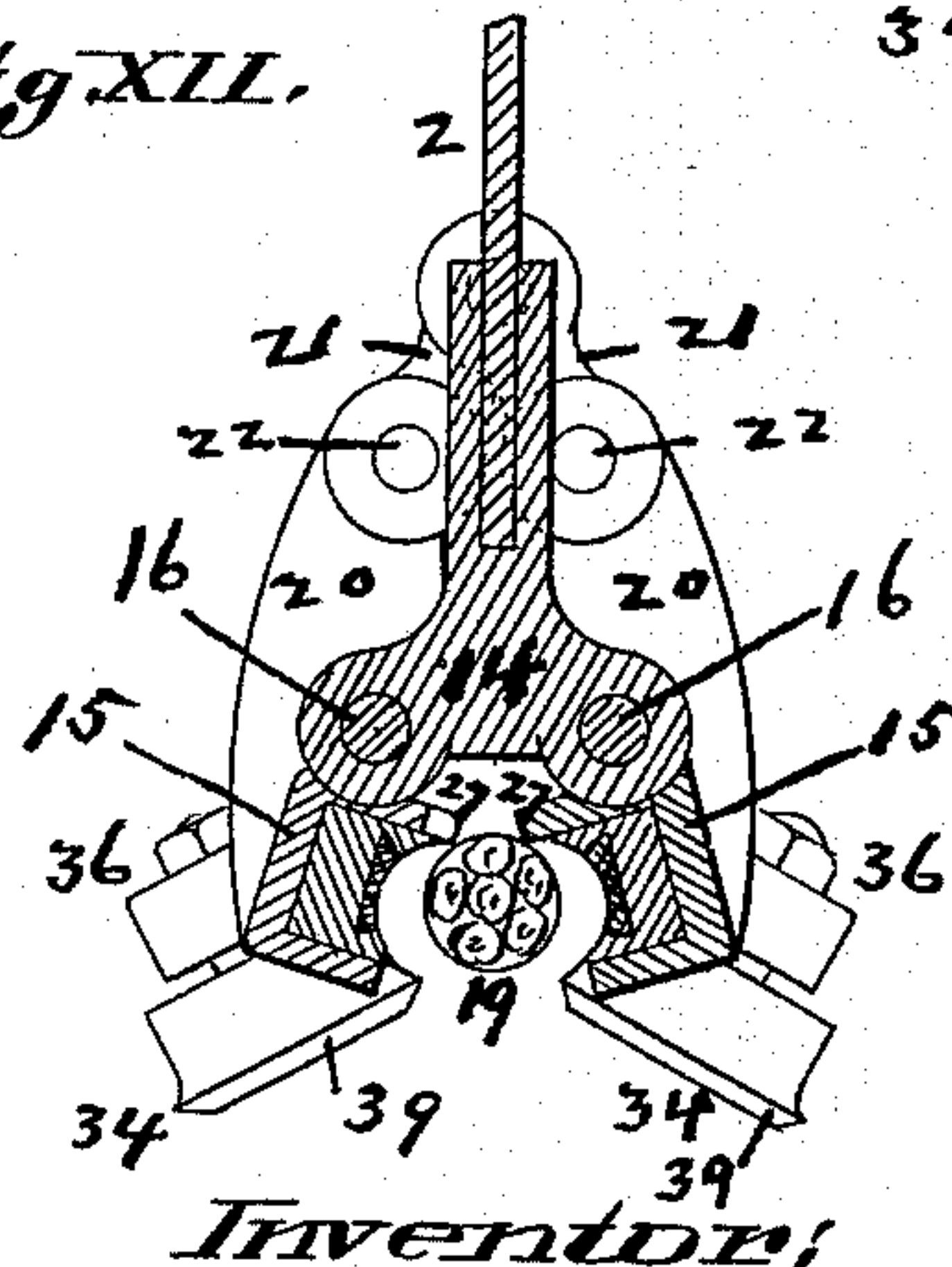


Fig. XI.



Geo. H. Knight
Notary Public

Fig. XII.



Jacob Volk.

UNITED STATES PATENT OFFICE.

JACOB VOLK, OF ST. LOUIS, MISSOURI, ASSIGNOR TO THE VOLK CABLE CROSSING GRIP AND CAR BRAKE COMPANY, OF CHICAGO, ILLINOIS.

CABLE-GRIP.

SPECIFICATION forming part of Letters Patent No. 413,584, dated October 22, 1889.

Application filed August 3, 1889. Serial No. 319,620. (No model.)

To all whom it may concern:

Be it known that I, JACOB VOLK, of the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Cable-Grips, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to certain improvements in grips for cable railways; and my invention consists in features of novelty hereinafter fully described, and pointed out in the claims.

Figure I is a side elevation of my improved grip. Fig. II is an enlarged detail elevation showing the lower end of the grip. Fig. III is an end view of the lower end of the grip, showing the guard-plate in section. Fig. IV is an inside view or elevation of one of the jaws with the die removed. Fig. V is a horizontal section taken on line V V, Fig. III, and showing also one of the jaw-plates. Fig. VI is a top view of one of the dies with part of the jaw carrying the die in section. Figs. VII and VIII are vertical sections taken on line VII VIII, Fig. II, Fig. VII showing the jaws closed, and Fig. VIII showing them open. Fig. IX is a similar view to Fig. II, but showing the invention applied to a larger grip than that illustrated in Fig. II. Fig. X is an inside view of one of the jaws shown in Fig. IX. Figs. XI and XII are vertical sections taken, respectively, on lines XI XI and XII XII, Fig. IX. The jaws are shown closed in Fig. XI and open in Fig. XII. Fig. XIII represents a modification.

1 represents a bar, to which are rigidly secured downwardly-extending plates 2. The frame thus formed of this bar and these plates is designed to be rigidly secured to the carrying-frame of the grip-car, and to the lower end of the plates 2 may be secured the usual guard-plate or bars 3. Between the plates 2 is a movable plate 4, that operates the jaws. On the upper end of this plate 4 is secured a notched segment 5, with which engages the pawl 6, pivoted to the operating-lever 7, and having the usual manipulating-rod 8 and handle 9. The lower end of the lever 7 is connected by a link 10 to the bar 1, so that as

the lever is moved the plate 4 will be raised and lowered, as will be plainly understood. To these parts *per se* I make no claim as inventor.

To the lower end of the plate 4 is secured a bar 11 by means of bolts or rivets 12. This bar is shown in Figs. VII, VIII, and XI. It is provided with end lugs 13, which embrace the plates 2 and hold the bar from lateral movement, while it is permitted to move vertically with the plate 4. The bar 11 is shown as consisting of two pieces in Fig. XI, one on each side of the plate 4; but the two pieces virtually form one bar, and I will refer to them in the singular number. Between their lower ends, beneath the plate 4, I prefer to insert a strip 11^a, to fill the space between them, and which will be referred to as part of the bar. In Figs. VII and VIII the bar is shown of a single piece of metal slotted to receive the plate 4.

On the lower end of each plate 2 is a cross-head 14, one of these heads being shown plainly in Fig. XII in transverse section and in side view in Fig. III.

15 represents the jaws of the grip, which are secured to the heads 14 by pins or rods 16, (see Figs. II, III, and XII,) the jaws having ears 17 fitting between ears 18 on the heads and the pins passing through these ears. The jaws turn on the pins 16 as they are opened and closed to release and grasp the cable 19. On the jaws 15 are upwardly-extending projections 20, to which links 21 are connected by means of pins 22. The inner ends of the links are connected by means of a rod or pin 23 to the bar 11, as shown plainly in Figs. VII, VIII, and XI, also Fig. V. The projections 20 and links 21 form toggles connecting the jaws to the bar 11, and consequently to the movable plate 4, and, the jaws being pivoted to the fixed cross-heads 14 on the stationary plates 2, it will be understood that by operating the lever and moving the plate 4 the jaws will be correspondingly operated or opened and closed according to the direction in which the lever is moved, and this toggle arrangement provides a very cheap, durable, and effective means for operating the jaws.

With a short grip, as shown in Figs. I to VIII, inclusive, it would probably be unnecessary to have any central connection between the two jaws, while with a long grip, as shown in Figs. IX to XII, inclusive, it might be desirable to have such a connection to prevent the possibility of the jaws springing between their end supports or between the heads 14. Such a connection as shown in Fig. XI may be used for this purpose. It consists of a link 24, having perforated ends 25, through which pins 26 are passed, the pins also passing through projections formed on the jaws, and between which the link would be placed. The pivots of the link 24 should of course be placed on line with the pivots of the cross-heads 14, so as not to interfere with the swinging motion of the jaws in opening and closing. I have not clearly shown the ears on the jaws between which the ends of the link 24 would fit, but they would be similar to the ears 17, only they would be slotted to receive the ends of the link. Of course more than one of these links might be interposed between the cross-heads 14, if desired.

In Figs. X to XII, inclusive, I have also shown a means for preventing any possibility of the cable passing up above the jaws, and thus getting out of their grasp. The means consists of projections 27, formed on the upper edge of the jaws, the projections on one jaw interlocking with or lapping beyond the projection of the other jaw.

In Fig. X I have shown one projection on one end of the jaw and two projections on the other end. The corresponding ends of the other jaw would be the reverse—that is, the end corresponding to the end having a single projection in Fig. X would have two projections between which this single projection would fit or interlock, and the end of the other jaw corresponding to the end having two projections, as shown in Fig. X, would have a single projection fitting between or interlocking with these two projections shown in Fig. X. Thus, as shown in Fig. XII, there would be no possibility of the cable rising above the jaws when the latter are open.

28 represents the dies. They are provided at their backs with notched projections or ears 29, which are shown clearly in Fig. VI. These projections or ears fit in slots or openings 30, formed in the jaws, (see Fig. IV,) the dies themselves fitting in the recessed jaws, as clearly shown in Figs. VII, VIII, XI, and XII. The outer faces of the jaws are provided with lugs or projections 31, through which pins 32 are passed, these pins passing also through the ears or projections on the dies 28. The dies are thus removably connected to the jaws, and can be easily and quickly removed and replaced by others when they become worn out or useless. The pins 32 do not fill the slots in the ears 29, so that as the faces of the dies wear off strips may be placed behind them, or between them and the jaws, to compensate for this wear by setting

the dies out. To each outer end of each jaw is secured an anti-friction pulley or roller 34. These rollers are arranged in pairs, or arranged to act in pairs—that is, the two at each end of the jaws are arranged to act together, as shown in Figs. III, VII, and XI. Each roller is journaled on a stem 35, these stems passing through the jaws and being held therein by means of nuts 36. At the inner ends of the journaled portions of the stems the stems are provided with non-circular portions 37, which fit in enlargements of the perforations or openings in the jaws through which the stems pass, as shown clearly in Fig. III. Beyond these non-circular portions the stems are made round to receive the nuts 36. These non-circular portions 37 permit the nuts 36 to be tightened without drawing the rollers up against the jaws, as shown. The stems are arranged in an inclined position, which throws the anti-friction rollers at an angle. The rollers have bearing-surfaces 38, through which the cable rides when the jaws are slightly open to allow the movement of the cable through the grip, the rollers thus carrying the cable, instead of its being carried by the dies when the jaws are slightly open, but not entirely so, the result being a saving in the wear upon the dies. The rollers have outer inclined surfaces 39, the surfaces of each pair bearing against each other, as shown in Fig. III. Now, as the dies wear back, it is evident that the rollers will accommodate themselves to this wear—that is, there being a space left between the inner faces of the rollers and the jaws and the rollers bearing together at their surfaces 39, they will shift inward on their journals as the dies wear back.

In Fig. XIII I have shown a modification of the rollers, which consists of flaring the ends of the dies to make rounded bearing-surfaces 40, over which the cable would pass when the jaws are slightly opened.

I claim as my invention—

1. In a cable-grip, the combination of vertical stationary plates, cross-heads secured to the lower ends of the plates, jaws pivoted to the cross-heads, a connecting-link 24, pivoted to the jaws between the cross-heads, a movable plate, a lever for operating the movable plate, and toggles connecting the jaws to the movable plate, substantially as and for the purpose set forth.

2. In a cable-grip, the combination of movable jaws and mechanism for moving the jaws, said jaws having interlocking projections 27, substantially as and for the purpose set forth.

3. In a cable-grip, the combination of the jaws, mechanism for operating the jaws, and anti-friction rollers secured in pairs to the ends of the jaws, said rollers having stems with elongated journal-bearings to allow the rollers to adjust themselves to the position of the jaws, substantially as and for the purpose set forth.

4. In a cable-grip, the combination of the jaws, mechanism for operating the jaws, and the anti-friction rollers 34, having stems 35, with non-circular portions 37, threaded portions on one side of the non-circular portions, and journals on the other side of the non-circular portions, substantially as and for the purpose set forth.

5. In a cable-grip, the combination of the jaws, mechanism for operating the jaws, and anti-friction rollers 34, having elongated journals and inclined bearing-surfaces 39, substantially as and for the purpose set forth.

6. In a cable-grip, the combination of the jaws and dies 28, said dies having ears 29, with enlarged slots to receive retaining-pins smaller in diameter than the width of the slots to permit the jaws to be set out as they become worn, substantially as set forth.

JACOB VOLK.

In presence of—

GEO. H. KNIGHT,
E. S. KNIGHT.